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YOUR REFERENCE:

TELEFAX AND MAIL
(9 pages)

VIITTEEMME:
OUR REFERENCE:

VAL 218 PCT

INTERNATIONAL PATENT APPLICATION NO. PCT/FI00/00746,
in the name of VALMET CORPORATION et al

Referring to the written opinion of 16 August 2001 we respectfully submit the following:

Amendments:

We enclose new pages 1, 3 and 8-11, which replace pages 1, 3 and 8-11 presently on file.

New independent claims 1 and 10 replace the original independent claims 1 and 11.

New claims 1 and 10 differ from original corresponding claims in that:

- The characterizing parts of the original claims have been transferred to the preambles of the new claims.
- The feature "the surface of the doctoring means (3) facing the web is outward curved in order to support the web (2) at the doctoring point" has been added to the characterizing part of the new claim 1 and the feature "outward curved doctoring means (3) is used in order to support the web (2) at the doctoring point" has been added to the characterizing part of the new claim 10.

The amendments of the claims are based on the subject matter on page 5 in lines 1-17 of the description and figures 2 to 5 and 7.

Independent claims 2 and 12 have been removed.

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References to the original independent claims 2 and 12 on pages 1 and 3 have been deleted.

Original claims 3-10, 13 and 14 have been renumbered. References to the preceding claims have also been corrected.

The reference number 6 in new claims 4 and 5 has been changed to number 7 in order to bring it in line with the fig. 4 and the description.

No new material has been added.

Novelty:

Cited reference D1, US 624,715, discloses a coater in which the coating mix is applied onto a web along a pouring lip placed above the web. The boundary air travelling on the web is removed by a blade positioned in front of the pouring lip. The blade comprises an air slot through which the boundary air is also removed by sucking. In D1 the web is supported by a backing roll at the boundary air removal point.

The second cited reference D2, US 5,340,402, discloses a short-dwell coater where a slat, which removes boundary air travelling on the surface of the web, is positioned in front of an application chamber of the coater. The slat comprises an air channel through which boundary air is also sucked away from the surface of the web. The apparatus described in D2 relates to a short-dwell coating, not to a curtain coating like our invention. Also in D2 a backing roll supports the web at the boundary air removal point.

The third cited reference, US 5,885,659, discloses a curtain coater in which the boundary air is removed by a shielding device positioned in front of the application point of the coating mix curtain. At the doctoring point the web is supported on the opposite side by a guide roll.

Since the air doctoring means in cited references are not outward curved in order to support the web at the doctoring point, our new independent claims 1 and 10 are novel.

Inventive step:

The problem, which our invention solves compared to cited references, is to decrease the amount of boundary air travelling on the surface of the web after doctoring point and to support the web at the doctoring point by doctoring means.

According to our invention, this problem is solved by using outward curved doctoring means.

In the cited references the web is supported by a backing roll positioned on the opposite side of the web than the doctoring device when the boundary air is removed from the surface of the web. Therefore there must be at least a small gap between the web and the doctoring device in order to prevent the doctoring device from touching and thus damaging the web. Because it is impossible to place the doctoring device very close to

the web surface, some boundary air remains on the surface of the web after the doctoring point, which deteriorates the quality of the coating layer.

In our invention the surface of air-doctoring means facing the web is outward curved in order to support the web at the doctoring point. For that reason the distance between the web and the doctoring means can be very short, typically only 0-500 μm depending on the speed of the web and the radius of curvature of the doctoring surface. Thus, the amount of boundary air travelling on the web surface after the doctoring point is essentially smaller than in embodiments described in cited references.

Further, the other advantage of our invention compared to embodiments presented in cited references is that the travel direction of the web can be guided by the doctoring means, whereby a separate guide roll is not needed in front of the application point of coating mix as in D3, for example.

Because any of the cited documents does not suggest that the outward curved doctoring means could be used in order to support the web at the doctoring point, it would be impossible for person skilled in the art to end up to our invention on the bases of cited references. Therefore we are of the opinion that the invention defined in new independent claims, in addition to being novel, also involves a clear inventive step.

Yours faithfully,
Seppo Laine Oy

Jyrki Nissinen

Encl.: new pages 1, 3 and 8-11